REMARKS

Claims 1, 4, 5, 13, 15, 16 and 17 are pending and stand ready for further action on the merits.

Applicant notes with appreciation that the Examiner conducted a personal Interview with Applicant's representative on February 4, 2003. In the February 4, 2003 interview, the Applicant proposed to amend claim 1 to insert thereinto the additional flame retardant (C) (the subject matter of claims 6 and 7). In response, the Examiner stated to the effect that the Applicant's such proposed amendment (the incorporation of the subject matter of claims 6 and 7 into claim 1) would be insufficient for obtaining allowance of the present application. The Examiner suggested that, in addition to the Applicant's proposed amendment, the Applicant would further amend the claims by limiting the structure and/or concentration of the siloxane component (B) to distinguish from the references.

In view of the Examiner's suggestion made in the February 4, 2003 interview, the Applicant has instantly amended the claims as indicated in the Proposed Amendment attached hereto. The instant amendments to the claims are as explained hereinbelow.

In order to more clearly define the present invention, the Applicant has instantly amended claim 1 as follows.

The subject matter of claims 6 and 7 has been inserted into claim 1. Specifically, claim 1 has been amended to state:

that, in addition to the flame retardant (B) comprising at least one aromatic group-containing silicone compound of formula (1), there is also added an **additional flame retardant (C)** comprising at least one member selected from the group consisting of a metal salt flame retardant, a phosphorus-containing flame retardant, a nitrogen-containing flame retardant, a silicon-containing flame retardant other than the silicone compound (B), an inorganic flame retardant and a fibrous flame retardant, and

that the additional flame retardant (C) is added **in an amount of from 0.001 to 100 parts by weight**, relative to 100 parts by weight of the resin component (A).

Support for this amendment is found at page 42, line 22 to page 43, line 7 of the present specification.

Claim 1 has been amended to state that the "at least one organic polymer resin other than an aromatic polycarbonate" is selected from the group consisting of aromatic vinyl polymers, olefin polymers, polyesters, polyamides, polyphenylene ethers and epoxy polymers. **Support for** this amendment is found at page 22, lines 20 to 23 of the present specification.

Claim 1 has been amended to change the term "aromatic group" to --phenyl group--. **Support for** this amendment is found at, for example, page 39, lines 12-13 of the present specification.

Claim 1 has been amended to **limit** the amount (originally "5 to 100 mole %") of the phenyl group (aromatic group) **to** 10 to 90

mole %. **Support for** this amendment is found at page 41, lines 4 to 6 of the present specification.

Claim 1 has been amended to state that the silicone compound (B) has a linear configuration. This amendment is **supported** by the formula (1) recited in claim 1. **Support for** the expression "linear configuration" is found at, for example, page 1, lines 18-19 of the present specification.

Claim 1 has been amended to **limit** the "monovalent C_1-C_{20} hydrocarbon group" (as each of R^1 to R^4) **to** a methyl group, an ethyl group, a butyl group and a phenyl group. **Support for** this amendment is found at page 39, lines 8 to 13 of the present specification.

Claim 1 has been amended to **limit** the "metal-containing monovalent group comprising a metal atom having bonded thereto at least one member selected from ..." (as each of R^3 and R^4) **to** a silicon-containing monovalent group comprising a silicon atom having bonded thereto at least one member selected from the group consisting of a hydrogen atom, a methyl group, an ethyl group, a butyl group and a phenyl group. **Support for** this amendment is found at page 38, lines 17-18 and page 39, lines 8 to 13 of the present specification.

Claim 1 has been amended to **limit** the range of "n" (originally "1 or more") in the formula (1) **to** the range of 100

or more. **Support for** this amendment is found at page 41, lines 10-11 of the present specification. In accordance with this amendment, the description (in claim 1) reading: "silicone compound (B) comprising a monomer, a polymer or a mixture thereof" has been changed to read: "silicone compound (B) comprising a polymer".

Claim 1 has been amended to **limit** the amount (originally "0.1 to 100 parts by weight") of the flame retardant (B) **to** 0.1 to 10 parts by weight. **Support for** this amendment is found at page 40, lines 22-24 of the present specification.

In accordance with the amendments to claim 1, claims 2, 3 and 14 have been canceled, and the dependency and wording of claims 4, 5 and 13 have been amended.

As also seen in the Proposed Amendment, the following new dependent claims 15-17 have been added.

> **Claim 15.** The process according to claim 1, wherein said resin mixture has an aromatic polycarbonate content of 70 % by weight or more.
> **Claim 16.** The process according to claim 1, wherein said additional flame retardant (C) comprises 0.001 to 10 parts by weight of an organic sulfonic acid metal salt and 0.001 to 10 parts by weight of a polytetrafluoroethylene.
> **Claim 17.** (NEW) The process according to claim 1, wherein when the additional flame retardant (C) is a phosphorus-containing flame retardant which is at least one selected from the group consisting of methylneopentyl phosphite, pentaerythritol diethyl diphosphite, methyl neopentyl phosphonate, dineopentyl hypophosphite, phenylpyrocatechol phosphite, and dipyrocatechol hypodiphosphate.

Support for new claim 15 is found at page 21, line 25 to page 22, line 4 of the present specification. **Support for** new claim 16 is found at page 62, lines 18 to 23 of the present specification. Support for new claim 17 can be found on page 49, lines 12-17.

Serizawa et al. (U.S. 6,001,921)

Claims 1 to 4 have been rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **the Serizawa patent**. Specifically, the Examiner states as follows.

> " Serizawa exemplifies (C7) a blend of PC with 4 pph of an aromatic polysiloxane. The MW of the polysiloxane is 40,000 and therefore would be expected to have the viscosity of claim 4."

Accordingly, the Examiner is relying on Comparative Example 7 in finding that Serizawa et al. anticipate the present claims. In the February 4, 2003 interview, the Examiner stated to the effect that the insertion of the additional flame retardant (C) (the subject matter of claims 6 and 7) into claim 1 may remove the rejection over **the Serizawa patent**. Further, as mentioned above, the Examiner suggested that the Applicant further amends the claims by limiting the structure and/or amount of the silicone compound (B) to distinguish from the references.

The Applicant respectfully traverses as follows.

As explained above, the Applicant has instantly inserted the

subject matter of claims 6 and 7 into claim 1, i.e., the Applicant has instantly amended claim 1 to state:

that, in addition to the flame retardant (B) comprising at least one aromatic group-containing silicone compound of formula (1), there is also added an **additional flame retardant (C)** comprising at least one member selected from the group consisting of a metal salt flame retardant, a phosphorus-containing flame retardant, a nitrogen-containing flame retardant, a silicon-containing flame retardant other than the silicone compound (B), an inorganic flame retardant and a fibrous flame retardant, and that the additional flame retardant (C) is added **in an amount of from 0.001 to 100 parts by weight**, relative to 100 parts by weight of the resin component (A).

Further, as explained above, the structure and amount of the silicone compound (B) recited in claim 1 **have been greatly limited at the request of the Examiner.**

That is, as mentioned above, the following limitations have been added to the silicone compound (B) recited in claim 1. The "aromatic group" has been limited to --phenyl group--. The amount (originally "5 to 100 mole %") of the phenyl group (aromatic group) has been limited to 10 to 90 mole %. There has been inserted a statement that the silicone compound (B) has a linear configuration. The "monovalent C_1-C_{20} hydrocarbon group"

(as each of R^1 to R^4) has been limited to a methyl group, an ethyl group, a butyl group and a phenyl group. The "metal-containing monovalent group comprising a metal atom having bonded thereto at least one member selected from ..." (as each of R^3 and R^4) has been limited to a silicon-containing monovalent group comprising a silicon atom having bonded thereto at least one member selected from the group consisting of a hydrogen atom, a methyl group, an ethyl group, a butyl group and a phenyl group. The range of "n" (originally "1 or more") in the formula (1) has been limited to the range of 100 or more. The amount (originally "0.1 to 100 parts by weight") of the flame retardant (B) has been limited to 0.1 to 10 parts by weight.

Therefore, it is firmly believed that the process of the present invention defined in the instantly amended claim 1 is **fully patentable over the Serizawa patent.**

Although it is believed that the rejection over the Serizawa patent has been removed by the instant amendments to claim 1, for reference, the Serizawa patent is discussed below.

The resin composition of Comparative Example 7 of the Serizawa patent does not contain the additional flame retardant (C) recited in the instantly amended claim 1 of the present application.

Therefore, the process of the present invention now clearly

distinguishes over Comparative Example 7 of the Serizawa patent.

As apparent from claim 1 of the Serizawa patent, the silicone resin used in the Serizawa patent has both $R_2SiO_{1.0}$ units and $RSiO_{1.5}$ units, wherein the $RSiO_{1.5}$ unit is a **T-unit (trifunctional)** (see column 6, line 1 of the Serizawa patent). That is, the silicone resin used in the Serizawa patent has a **branched** structure and, hence, is **different from** the aromatic group-containing **linear** silicone compound recited in claim 1 of the present application.

Therefore, it is apparent that the Serizawa patent does not teach or suggest at all that, by using the silicone compound (B) recited in claim 1 of the present application, excellent flame retardancy can be imparted to an aromatic polycarbonate. The Serizawa patent does not teach or suggest **the technical concept** of using the silicone compound (B) recited in claim 1 of the present application in order to impart flame retardancy to an aromatic polycarbonate.

Thus, the Serizawa patent does **not** teach or suggest the process of the present invention for imparting flame retardancy to an aromatic polycarbonate.

The present inventor has **for the first time** found that, by adding the aromatic group-containing silicone compound (B) recited in claim 1 of the present application to an aromatic

polycarbonate, great advantages can be obtained **not only** in that a great flame retardancy can be imparted to the aromatic polycarbonate, **but also** in that the aromatic polycarbonate can be improved with respect to melt fluidity and melt-molding stability (i.e., substantially no variation or only small variation in the quality of shaped articles obtained by melt-molding), and further in that a shaped article produced from the resultant resin composition has excellent properties with respect to mechanical properties, light stability and appearance.

The **excellent effects of the present invention** are clearly shown in Exhibit 1 of the Declaration under 37 C.F.R. §1.132 by Mr. Nishihara submitted together with the June 13, 2002 Response (the executed document is enclosed herewith). The Applicant's observations made in the Exhibit 1 of the Mr. Nishihara Declaration substantiate that the flame retardant used in the present invention (aromatic group-containing **linear** silicone compound recited in claim 1) is **far superior** to a flame retardant comprising a branched or crosslinked silicone compound. As substantiated by the observations made in the above-mentioned Exhibit 1, the use of the aromatic group-containing linear silicone compound recited in claim 1 is **critical** for achieving the excellent effects of the present invention, i.e., the effects that the polycarbonate resin composition obtained by the process of the present invention is advantageous not only in that it has

excellent flame retardancy and excellent melt-molding stability, but also in that it can be used for producing a shaped article having excellent mechanical properties, excellent light stability and excellent appearance.

Thus, the present invention has novelty and inventive step over the Serizawa patent and withdrawal of the rejection is respectfully requested.

Brown, U.S. 4,390,651, Sakano et al., U.S. 4,305,856, JP 09087504 and JP 7196871

The following rejections based on the above references are pending:

a) Claims 1-5 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over the Brown Patent;

b) Claims 1-4 and 13 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over the Sakano Patent;

c) Claims 1-5 and 13 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over the JO 9087504 Patent; and

d) Claims 1-5, 13 and 14 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over the JO 7196871 Patent.

Applicant respectfully traverses each of the rejections.

With regard to **the Brown patent**, **the Sakano patent** and **the J09087504 patent**, in the February 4, 2003 interview, the Examiner stated to the effect that the insertion of the additional flame

retardant (C) (the subject matter of claims 6 and 7) into claim 1 would remove the rejection over **the Brown patent, the Sakano patent** and **the J09087504 patent**. However, the Examiner also stated to the effect that the insertion of the additional flame retardant (C) into claim 1 would still not provide patentability over the references cited in the first office action (dated February 13, 2002).

In this respect, as mentioned above, the Examiner suggested that the Applicant further amends the claims by limiting the structure and/or amount of the silicone compound (B) to distinguish from the references.

The Applicant responds as follows.

As explained above, the Applicant has instantly amended claim 1 to insert the additional flame retardant (C) (the subject matter of claims 6 and 7) into claim 1. Further, as explained above, the structure and amount of the silicone compound (B) recited in claim 1 **have been greatly limited at the request of the Examiner**.

Therefore, it is firmly believed that the process of the present invention defined in the instantly amended claim 1 is **fully patentable over all references (including JP 7196871)** which have been cited by the Examiner.

For providing additional information which facilitates the Examiner's understanding of the inventive step of the process of

the present invention, attention is drawn to the following description (at page 17, line 15 to page 20, line 3) of the present specification:

" The above-mentioned component (B) not only acts as a flame retardant for the above-mentioned resin component (A) but also imparts excellent melt fluidity and excellent melt-molding stability (i.e., substantially no variation or only small variation in the quality of shaped articles obtained by melt-molding) to the resin composition of the present invention and improves the mechanical properties, light stability and appearance of the shaped articles obtained by molding the aromatic polycarbonate resin composition of the present invention.

With respect to the function of component (B) as a flame retardant, it is believed that, immediately after the start of burning of the resin composition of the present invention (especially when it is in the form of a shaped article), a film of silica derived from component (B) is formed on the surface of the resin composition, and this silica film improves the flame retardancy of resin component (A).

The flame retardancy of resin component (A) can be greatly improved by component (B). The mechanism of the great improvement of the flame retardancy of resin component (A) by component (B) is presumed to be as follows.

Component (B) contains an aromatic group. For this reason, component (B) exhibits a good compatibility with resin component (A), so that, in the resin composition of the present invention, component (B) is finely dispersed in resin component (A), thereby greatly improving the flame retardancy of resin component (A).

Further, component (B) is an aromatic group -containing silicone compound selected from the group consisting of an aromatic group-containing silicone compound having a linear configuration and an aromatic group-containing silicone compound having a cyclic

configuration, and, hence, component (B) has no branched or crosslinked structure. For this reason, when a shaped article obtained by molding the aromatic polycarbonate resin composition of the present invention begins to burn, the movement of the molecules of component (B) is greatly promoted, so that the compatibility of component (B) with resin component (A) is further improved. As a result, the reaction of siloxane groups in component (B) with carbonate groups in resin component (A) is accelerated, thereby effectively suppressing the burning of resin component (A).

The silicon atom of component (B) is an element which has a low surface energy. Therefore, in the shaped article obtained by molding the aromatic polycarbonate resin composition of the present invention, the location of component (B) is biased toward the surface portion thereof. In addition, component (B) comprises a compound which has a linear configuration and/or a compound which has a cyclic configuration, and, hence, component (B) has no branched or crosslinked structure. Therefore, the movement of component (B) to the surface portion of the shaped article is promoted. As a result, when the shaped article obtained by molding the aromatic polycarbonate resin composition of the present invention begins to burn, the concentration of component (B) in the surface portion of the shaped article becomes high, so that the shaped article exhibits excellent flame retardancy." (emphasis added)

None of the cited references teach or suggest the essential features of the present invention and effects thereof.

Accordingly, withdrawal of each of the rejections is respectfully requested.

It is believed that the present application is now in condition for allowance. A Notice to such effect is earnestly

solicited.

Reconsideration and early favorable action on the claims are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D. (Reg. No. 43,575) at the telephone number of the undersigned below.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: (1) Version with Markings to Show Changes Made
(2) Executed Rule 132 Declaration by Mr. Nishihara

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2, 3 and 14 have been canceled.

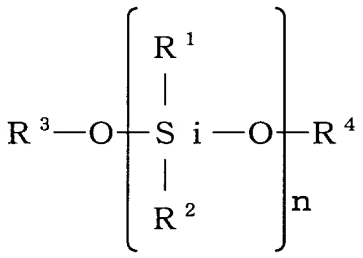
Claims 1, 4, 5 and 13 have been amended as follows.

Claim 1. (Twice amended) A process for imparting flame retardancy to a resin component (A) selected from the group consisting of an aromatic polycarbonate and a resin mixture of an aromatic polycarbonate and at least one organic polymer resin [other than an aromatic polycarbonate] selected from the group consisting of aromatic vinyl polymers, olefin polymers, polyesters, polyamides, polyphenylene ethers and epoxy polymers, wherein said resin mixture has an aromatic polycarbonate content of 50 % by weight or more,

said process comprising adding to said resin component (A) a flame retardant (B) comprising at least one [aromatic] phenyl group-containing silicone compound having a linear configuration, and an additional flame retardant (C) comprising at least one member selected from the group consisting of a metal salt flame retardant, a phosphorus-containing flame retardant, a nitrogen-containing flame retardant, a silicon-containing flame retardant other than said silicone compound (B), an inorganic flame

retardant and a fibrous flame retardant, [wherein said flame retardant is added in an amount of 0.1 to 100 parts by weight, relative to 100 parts by weight of said resin component,]

said at least one [aromatic] phenyl group-containing silicone compound (B) comprising [a monomer, a polymer or a mixture thereof,] a polymer which is represented by the following formula (1):



(1)

wherein:

each of R^1 and R^2 independently represents a hydrogen atom [or a monovalent C_1-C_{20} hydrocarbon group] , a methyl group, an ethyl group, a butyl group or a phenyl group;

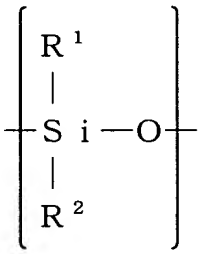
each of R^3 and R^4 independently represents a hydrogen atom [; a monovalent C_1-C_{20} hydrocarbon group; a metal-containing monovalent group comprising a metal atom having bonded thereto at least one member selected from the group consisting of a hydrogen atom and monovalent C_1-C_{20} hydrocarbon

groups] , a methyl group, an ethyl group, a butyl group, a phenyl group or a silicon-containing monovalent group comprising a silicon atom having bonded thereto at least one member selected from the group consisting of a hydrogen atom, a methyl group, an ethyl group, a butyl group and a phenyl group;

at least one of R^1, R^2, R^3 and R^4 is [a C_6-C_{20} aromatic group having a valence according to the definition of R^1, R^2, R^3 or R^4] a phenyl group; and

n is [1] 100 or more in terms of the number average n value,

wherein [, when said flame retardant is a polymer represented by formula (1) wherein n is 2 or more in terms of the number average n value,] the recurring units, each represented by the following formula (3):



(3)

wherein each of R^1 and R^2 is as defined for formula (1),

are the same or different, so that said flame retardant (B) is a homopolymer or a copolymer, wherein said copolymer has a random, a block or an alternating configuration, [and]

wherein said flame retardant (B) contains said [aromatic] phenyl group in an amount of from [5 to 100] 10 to 90 mole %, based on the total molar amount of R^1, R^2, R^3 and R^4;

wherein said flame retardant (B) is added in an amount of from 0.1 to 10 parts by weight and said additional flame retardant (C) is added in an amount of from 0.001 to 100 parts by weight, each relative to 100 parts by weight of said resin component (A).

Claim 4. (Twice amended) The process according to [any one of claims 1 to 3] claim 1, wherein said flame retardant (B) exhibits a kinematic viscosity of 100 centistokes or more as measured at 25 °C in accordance with JIS-K2410.

Claim 5. (Twice amended) The process according to [any one of claims 1 to 3] claim 1, wherein said flame retardant (B) comprises a mixture of:

a silicone compound containing said aromatic group in an amount of from 5 to less than 50 mole %, based on the total molar amount of R^1, R^2, R^3 and R^4, and

a silicone compound containing said aromatic group in an amount of 50 mole % or more, based on the total molar amount of R^1, R^2, R^3 and R^4.

Claim 13. (Twice amended) The process according to claim 1, wherein said resin component (A) is [a] said resin mixture. [of an aromatic polycarbonate and at least one organic polymer resin selected from the group consisting of aromatic vinyl polymers, olefin polymers, polyesters, polyamides, polyphenylene ethers and epoxy polymers.]

Claims 15-17 have been added.